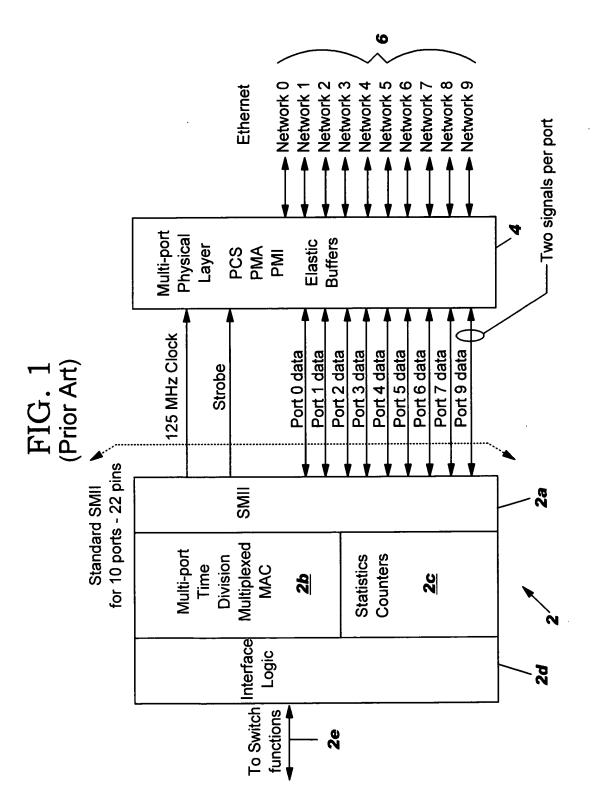09/834,591
RAL920000013US2
K. Barker et al.
Method and System for Fast Ethernet Serial
Port Multiplexing to Reduce I/O Pin Count
1/3

FIG. 1
(Prior Art)

Ethernet

Network 0
Network 1
Network 2
Network 3
Network 4
Network 5
Network 6
Network 7
Network 8
Network 9

6

Multi-port Physical Layer

PCS
PMA
PMI

Elastic Buffers

4

Two signals per port

125 MHz Clock

Strobe

Port 0 data
Port 1 data
Port 2 data
Port 3 data
Port 4 data
Port 5 data
Port 6 data
Port 7 data
Port 9 data

Standard SMII
for 10 ports - 22 pins

SMII

Multi-port
Time
Division
Multiplexed
MAC

2b

Statistics
Counters

2c

Interface
Logic

2a

2

2d

To Switch
functions

2e

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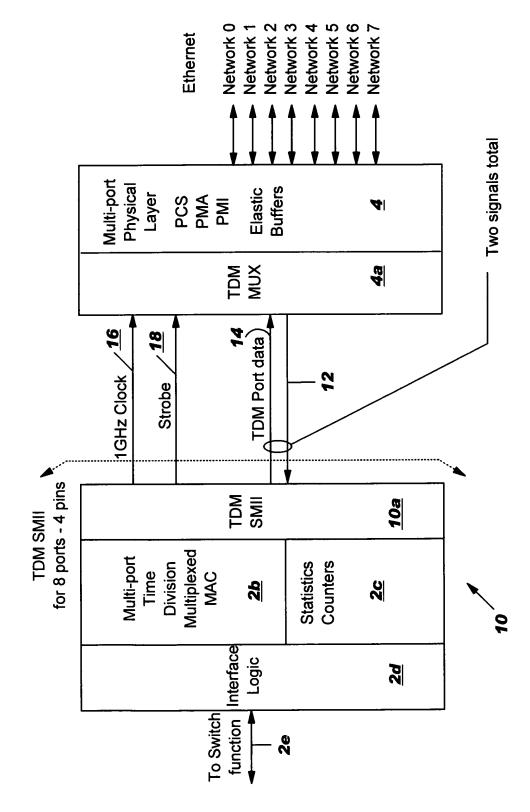Port Multiplexing to Reduce I/O Pin Count
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FIG. 2

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FIG. 3

	Clock										Clock					
	0	1	2	3	...	n	n+1	n+2	n+3	n+4	...	2n+1	2n+2	2n+3
network 0	X						X						X	
network 1		X						X						X
network 2			X						X					
network 3				X						X				
...											...			
network n						X						X		
strobe							X						X	